Remark

By this amendment, original claims 1 and 5-7 have been canceled without prejudice; claims 2-4 and 8-10 have been amended; and claims 11-30 have been added. Hence, claims 2-4 and 8-30 are presented for examination. It is respectfully submitted that no new matter has been introduced by this amendment.

35 U.S.C. §103 Rejections

In the Office Action mailed March 19, 1999, in the parent case, for his rejection, the Examiner relied upon 5,150,358 of Punj et al (hereinafter "Punj"), in view of US Patent No. 5,402,415 of Turner. The Applicant respectfully submits that the claims, as amended, are thought to overcome the reasons for rejection. The Applicant respectfully submits the following arguments pointing out significant differences between Punj and Turner and claims 2-4 and 8-10 submitted by the Applicant.

The test for obviousness under 35 U.S.C. §103(a) is whether the claimed invention would have been obvious to those skilled in the art in light of the knowledge made available by the reference or references. In re Donovan, 184 USPQ 414, 420, n. 3 (CCPA 1975). It requires consideration of the entirety of the disclosures of the references. In re Rinehart, 189 USPQ 143, 146 (CCPA 1976). All limitations of the claims must be considered. In re Boe, 184 USPQ 38, 40 (CCPA 1974). In making a determination as to obviousness, the references must be read without the benefit of applicant's teachings. In re Meng, 181 USPQ 94, 97 (CCPA 1974). In addition, the propriety of a Section 103 rejection is to be determined by whether the reference teachings appear to be

sufficient for one of ordinary skill in the relevant art having the references before him to make the proposed substitution, combination, or other modifications. In re Lintner, 173 USPQ 560, 562 (CCPA 1972).

A basic mandate inherent in Section 103 is that a piecemeal reconstruction of prior art patents shall not be the basis for a holding of obviousness. It is impermissible within the framework of Section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. In re Kamm, 172 USPQ 298, 301-302 (CCPA 1972). Put somewhat differently, the fact that the inventions of the references and of the applicant's may be directed to concepts for solving the same problem does not serve as a basis for arbitrarily choosing elements from references to attempt to fashion applicant's claimed invention. In re Donovan, 184 USPQ 414, 420 (CCPA 1975). As the Court of Appeals for the Federal Circuit held in In re Fritch, 23 USPQ 2d 1780, 1784 (Fed. Cir. 1992):

> Here, the Examiner relied upon hindsight to arrive at the determination of obviousness. It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious.[15] This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."[16]
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> ---
>
> [15] In re Gorman, 933 F.2d 982, 987, 18 USPQ 2d 1885, 1888 (Fed. Cir. 1991). See also Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1138, 227 USPQ 543, 547 (Fed. Cir. 1985).
>
> [16] In re Fine, 837 F.2d at 1075, 5 USPQ 2d at 1600.

A reference that teaches away from the applicant's invention may not properly be used in framing a 35 U.S.C. §103 rejection of applicant's claims. See United States v. Adams, 148 USPQ 429 (1966). As was stated in In re Gordon, 221 USPQ 1125, 1127 (Fed. Cir. 1984), "The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification." (emphasis added).

Discussion of the References:

Punj et al., U.S. Patent No. 5,150,358 (Punj). Punj discloses an ISDN switch comprising input ports, output ports, and a memory. Each input port processes input data into cells, which are transmitted through an ATM switching fabric to one of the output ports (col. 2, lines 65-68). Each output port comprises a memory which comprises four queues of priorities 1-4. When a cell is generated, it is assigned a priority level of 1-4 based on whether the virtual circuit of the cell is a constant bit rate (CBR) or a virtual bit rate (VBR), and based on the bit rate of the cell (col. 3, lines 16-18). The cell and priority level indicator are then transmitted to the appropriate output port (col. 3, lines 42-43), and stored in the queue for the determined priority indication (col. 3, lines 47-49). Punj further discloses a mechanism for adjusting the priority level based on a cell's age in the queue or its age at the top cell in the queue.

Turner, U.S. Patent No. 5,402,415 (Turner). Turner discloses a virtual circuit switch for multicasting. To implement a multicast connection from input *a* to outputs *b*, *c*, *d*, and *e*, a cell is recycled through a switch fabric a multiple number of times with a copy-by-two network creating an additional data cell upon

each recycle to satisfy the number of outputs. The switch fabric comprises a binary tree that is constructed with the source switch port *a* at its root and the destination switch ports *b*, *c*, *d*, and *e* at its leaves. Internal nodes represent switch ports acting as relay points, which accept cells from the switch but then recycle them back into the switch after relabeling the cells with a destination pair identifying the next two switch ports they are to be sent to. (Col. 2, lines 53-61, Fig. 3A and Fig. 3B).

Claim 2

The Examiner rejected claim 2 under 35 U.S.C. §103(a) as being unpatentable over Punj in view of Turner. These references do not singly or in combination disclose each and every element set forth in claim 2, as amended. Claim 2, as amended, reads:

> 2. An apparatus for handling multiple priorities for a multicast packet being output from a network element on at least two output ports comprising:
>
> at least a first output queue and a second output queue, the first output queue having a priority higher than the second output queue, at each output port;
>
> a memory configured to output forwarding information about the multicast packet in response to a memory access based in part on a multicast address of the multicast packet, the forwarding information including priority information indicating to which output queue at each output port the multicast packet will be directed.;
>
> a central processing unit (CPU) coupled to the memory; and
>
> a computer program mechanism coupled to the central processing unit (CPU) and configured to modify the priority information if a flow associated with the multicast packet is misbehaving.

(Emphasis added.)

In embodiments of the present invention, a forwarding memory comprises entries for source and destination addresses (flows). Each entry in forwarding memory is associated with an entry in associated memory, where the associated

memory comprises additional information about a given flow. For multicast packets, the information for an entry in the associated memory includes which output ports the packets will be sent to, and priority information. The priority information can be predetermined for a given flow, or it can be overridden by information for a given packet. The priority information can also be overridden by a Best Effort indicator, which is set if a given output port with which an indicator is associated experiences high volume traffic. Each output port comprises a number of queues having a predetermined priority. If an output port does not have its Best Effort indicator on, a given packet is placed in one of the queues of the output port as determined by the priority information in the associated memory entry. Therefore, according to claim 2, the forwarding information is obtained from accessing the associated memory (e.g. memory access) based upon a source and destination address (e.g. multicast address).

Punj does not disclose a mechanism for modifying the priority information based on a misbehaving flow. Instead, Punj discloses a mechanism for adjusting the priority level based on a cell's age in the queue or its age at the top cell in the queue. If the priority level in the Applicants' invention of claim 2 was modified based on the equivalent of aging in a queue, then the priority would be based on the amount of time a packet sat in a queue. Similarly, if the priority level in Punj was modified based on the equivalent of a misbehaving flow, then the priority in Punj would be based on the bit rate of the cell, for example. Neither of these situations exist. Furthermore, flow priority is lowered in Applicants invention. Punj teaches away from lowering priority in that Punj discloses upgrading a

queue's priority if a cell has been sitting in a queue for some predetermined amount of time.

Since Punj does not disclose accessing priority information based upon a multicast packet, and does not disclose modifying priority information based on a misbehaving flow, it is not properly combinable with the Turner reference since combining the references does not produce the invention as claimed. Therefore, an obviousness rejection under §103(a) cannot be supported.

Furthermore, to the extent that the Punj and Turner references are combinable, Turner does not disclose either one of accessing priority information based upon a multicast packet or modifying priority information based on a misbehaving flow. Since Turner cannot be properly combined with Punj to produce the Applicants' invention as recited in claim 2, a §103(a) rejection cannot be supported.

For at least these reasons, claim 2 is allowable over the Examiner's various proposed modifications to Punj.

Claims 3 and 4

The Examiner rejected Claims 3 and 4 under 35 U.S.C. §103(a) as being unpatentable over Punj.

Claim 3, as amended, reads:

3. The apparatus of claim 2, wherein the computer program mechanism modifies the priority information based on an amount of packets being transmitted through one of the output ports.

(Emphasis added.)

Claim 4, as amended, reads:

4. The apparatus of claim 2, wherein the computer program mechanism modifies the priority information based on information communicated between the network element and an intended recipient of the multicast packet.

(Emphasis added.)

Since Claims 3 and 4 depend from Claim 2, they inherit the limitations set forth in Claim 2, and the arguments presented in Claim 2 are equally applicable to Claims 3 and 4. Therefore, Punj does not disclose or suggest each and every element set forth in Claims 3 and 4. In the Examiner's comments directed to claims 3 and 4 in reference to modifying the priority information, the Examiner states that "Punj discloses that the switch has a mechanism for assigning priority for a virtual channel request coupled to the switching controller configured to *assign the priority indication* dynamically for the virtual request based on a bit rate (an amount of packets) being transmitted through the output ports or based on type of information (CBR or VBR) communicated between the switch and the intended recipient." (Office Action, p. 4.) However, as stated by the Examiner, this particular mechanism in Punj is configured to *assign* priority, not to *modify* priority as required by the Applicants' invention as recited by claim 2. This is a significant difference, since the modification of priority in Applicants' invention as recited by claim 2 is dependent on an algorithm to detect a misbehaving flow, which differs from assigning a priority based on a mapping algorithm.

Furthermore, as presented in arguments above, Punj does not disclose a mechanism for modifying the priority information based on a misbehaving flow. Instead, Punj discloses a mechanism for adjusting the priority level based on a cell's age in the queue or its age at the top cell in the queue. Therefore, an obviousness rejection under §103(a) cannot be supported.

Since Claims 3 and 4 add further limitations, they are believed to be allowable on further independent grounds in that the references do not disclose, suggest, or make obvious all elements of Claims 3 and 4, including these further limitations.

For at least these reasons, Claims 3 and 4 are allowable over the Examiner's various proposed modifications to Punj.

Claim 8

The Examiner rejected claim 8 under 35 U.S.C. §103(a) as being unpatentable over Punj in view of Turner. These references do not singly or in combination disclose each and every element set forth in claim 8. claim 8, as amended, reads:

> 8. An apparatus in a network element that is adapted to transmit a packet to multiple recipients and includes services for reservation-based protocols for handling multiple priorities, the apparatus comprising:
>
> at least two output ports, one associated with each of the multiple recipients, each of the output ports having at least a first output queue and at least a second output queue, the first output queue having a priority higher than the second output queue, at each port;
>
> a memory configured to output forwarding information about the packet in response to a memory access based in part on a header of the packet, the forwarding information including priority information indicating to which output queue at each output port the packet will be directed;
>
> a central processing unit (CPU) coupled to the memory; and
>
> a computer program mechanism coupled to the central processing unit (CPU) and configured to modify the priority information if a flow associated with the multicast packet misbehaves.

(Emphasis added.)

Punj does not disclose a mechanism for modifying the priority information based on a misbehaving flow. Instead, Punj discloses a mechanism for adjusting

the priority level based on a cell's age in the queue or its age at the top cell in the queue. See arguments presented in claim 2, above.

Claims 9 and 10

The Examiner rejected Claims 9 and 10 under 35 U.S.C. §103(a) as being unpatentable over Punj.

Claim 9, as amended, reads:

9. The apparatus of claim 8, wherein the computer program mechanism modifies the priority information based on the amount of packets being transmitted through one of the output ports.

Claim 10, as amended, reads:

10. The apparatus of claim 8, wherein the computer program mechanism modifies the priority information based on reservation-based protocol information communicated between the network element and an intended recipient of the multicast packet.

Since claims 9 and 10 depend from claim 8, they inherit the limitations set forth in claim 8, and the arguments presented in claim 8 are equally applicable to claims 9 and 10. Therefore, Punj does not disclose or suggest each and every element set forth in Claims 9 and 10. Furthermore, as presented in arguments above, Punj does not disclose a mechanism for modifying the priority information based on a misbehaving flow. Instead, Punj discloses a mechanism for adjusting the priority level based on a cell's age in the queue or its age at the top cell in the queue. See arguments presented in claims 3 and 4, above. Therefore, an obviousness rejection under §103(a) cannot be supported.

Since claims 9 and 10 add further limitations, they are believed to be allowable on further independent grounds in that the references do not disclose,

suggest, or make obvious all elements of claims 9 and 10, including these further limitations. For at least these reasons, claims 9 and 10 are allowable over the Examiner's various proposed modifications to Punj.

Conclusion

For the reasons cited above, claims 2-4 and 8-10 are thought to be in condition for allowance. Accordingly, Applicant respectfully requests the rejections be withdrawn and the claims as amended be allowed. Additionally, Applicants respectfully submit that new claims 11-25, which do not introduce new subject matter, also be allowed.

If the Examiner finds any remaining impediment to the prompt allowance of these claims that could be clarified with a telephone conference, the Examiner is respectfully requested to contact Michael DeSanctis at (303) 740-1980.

Charge our Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

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